

NASA TECH BRIEF

Marshall Space Flight Center



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Steam Automobile Analysis

A report has been published describing analysis techniques that can be used in the design of reciprocating steam engines for automobiles. The analysis is developed around the goal of optimizing fuel economy rather than power or thermal efficiency. As such, it is the first thorough documentation of a miles-per-gallon design analysis, and it should be of interest to the designers of engines operating on steam or other working fluids.

Performance is characterized by grouping discrete design parameters that result from a rigorous mathematical treatment. Equations are developed to describe the effects of engine displacements, gear ratios, supply temperatures and pressures, working mediums, and fuel-to-air ratios. Emphasis is placed on factors which yield the best fuel economy.

In the report, water is assumed as the working medium, and a second-order analysis is used; it combines classical power analysis and the ideal pressure-volume diagram. Included are many charts that present graphically the effects of design

parameters on performance. In addition, equations and data are given which can assist a designer in selecting among factors such as the working medium, horsepower, and engine components such as blower motors.

Note:

Requests for further information may be made in writing to:

Technology Utilization Officer
Marshall Space Flight Center
Code AT01
Marshall Space Flight Center, Alabama 35812
Reference: B75-10229

Patent status:

NASA has decided not to apply for a patent.

Source: J. A. Peoples
(MFS-23188)

Categories: 03 (Physical Sciences)
06 (Mechanics)

UNITED STATES DEPARTMENT OF JUSTICE



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